Developing a Community Process —

The National QC Materials Coordinator Program

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QC Materials for Genetic Testing Meeting

SAFER · HEALTHIER · PEOPLE™

National QC Materials Website

QC Materials
- QC Materials Home
- Reference Articles
- Guidance and Oversight
- Funding
- Assistance
- Materials Availability
- Materials Needed
- Contributor Acknowledgements

DLS Content
- DLS Home
- CLIA
- Genetics
- International
- IQLM
- MASTER
- Monitoring
- MPEP
- NLTN
- Publications
- Training

Other DLS Resources
- Resource Links

Genetics - QC Materials

The Genetic Testing Quality Control Materials Coordinator Project aims to coordinate a self-sustaining community process to improve the availability of appropriate and verified materials for:

- Quality control
- Proficiency testing
- Test development
- Research

The purpose of this project is:

- To help the genetic testing community obtain appropriate and validated materials
- To facilitate and coordinate information exchange between users and providers of QC materials
- To coordinate efforts aimed at development, contribution, verification and distribution of materials for genetic testing.

This page last reviewed: 10/18/2004

- **User Bulletin Board**
- **Contact us**

Done

QC Materials
- QC Materials Home
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DLS Content
- DLS Home
- CLIA
- Genetics
- International
- IQLM
- MASTER
- Monitoring
- MPEP
- NLTN
- Publications
- Training

Other DLS Resources
- Resource Links

QC Materials - Contributor Acknowledgements

This page last reviewed: 10/02/2004

QC Materials

- QC Materials Home
- Reference Articles
- Guidance and Oversight
- Funding
- Assistance
- Materials Availability
- Materials Needed
- Contributor Acknowledgements

DLS Content

- DLS Home
- CLIA
- Genetics
- International
- IQLM
- MASTER
- Monitoring
- MPEP
- NLTN
- Publications
- Training

Other DLS Resources

- Resource Links

QC Materials - Materials Availability

- Cystic Fibrosis
- Fragile X

This page last reviewed: 10/18/2004

QC Materials - Cystic Fibrosis Materials Availibility

Gene	Allele 1	Allele 2	Intron-8 Poly T	Transformed	Cell Type	Cell Bank	Number	CFTR Panel	Verified	Ver. Methods
CFTR	F508del	G551D		no	Fibroblast	Coriell	GM00142			
CFTR	G542X	H609R		yes	B-lymphocyte	Coriell	GM00504			
CFTR	F508del	F508del		no	Fibroblast	Coriell	GM00770			
CFTR	F508del	2184delA	7T/9T	yes	B-lymphocyte	Coriell	GM18799	yes	7 labs	Inno LIPA CFTR 36, CF V3 OLA, Celera/Abbott OLA, Invader, eucigene, MALDI-TOF
CFTR	F508del	R347P		yes	B-lymphocyte	Coriell	GM00897			
CFTR	621+1G-T	1154insTC		no	Fibroblast	Coriell	GM00999			
CFTR	F508del	2183AA-G	7T/9T	yes	B-lymphocyte	Coriell	GM18803		5 labs	inno LIPA CFTR 36, MALDI-TOF, elucigene, invader

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Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, U.S.A.
Tel: (404) 639-3311 / Public Inquiries: (404) 639-3534 / (800) 311-3435

QC Materials - Fragile X Materials Availibility

Gene	Gender	Submitter Sized	Submitter Verif. Method	Trans-formed	Mosaic?	Methylation Status?	Cell Type	Cell Bank	Cell Line Number	DNA Number	Project Verified	Project Ver. Methods
Fragile X	M	>200	PCR/Southern	yes			B-lymphocyte	Coriell	GM06852	NA06852		
Fragile X	F	?, >200	PCR/Southern	yes			B-lymphocyte	Coriell	GM06911	NA06911		
Fragile X	M	477	PCR	yes			B-lymphocyte	Coriell	GM06987	NA06987		

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QC Materials

- QC Materials Home
- Reference Articles
- Guidance and Oversight
- Funding
- Assistance
- Materials Availability
- Materials Needed
- Contributor Acknowledgements

DLS Content

- DLS Home
- CLIA
- Genetics
- International
- IQLM
- MASTER
- Monitoring
- MPEP
- NLTN
- Publications
- Training

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QC Materials - Needs Monitoring and Information Dissemination

- Materials Needed
  - Item
  - Item
- Contact Us

This page last reviewed: 10/18/2004

QC Materials

- QC Materials Home
- Reference Articles
- Guidance and Oversight
- Funding
- Assistance
- Materials Availability
- Materials Needed
- Contributor Acknowledgements

DLS Content

- DLS Home
- CLIA
- Genetics
- International
- IQLM
- MASTER
- Monitoring
- MPEP
- NLTN
- Publications
- Training

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- Resource Links

QC Materials - Assistance to Materials Contributors

- Letter of Invitation
- Collection and Submission Process

- Helpful Resources
  - IRB Protocols
  - Material Submission Protocols

- Guidelines and Recommendations
  - Sample Link 1
  - Sample Link 2

This page last reviewed: 10/18/2004

QC Materials
- QC Materials Home
- Reference Articles
- Guidance and Oversight
- Funding
- Assistance
- Materials Availability
- Materials Needed
- Contributor Acknowledgements

DLS Content
- DLS Home
- CLIA
- Genetics
- International
- IQLM
- MASTER
- Monitoring
- MPEP
- NLTN
- Publications
- Training

Other DLS Resources
- Resource Links

QC Materials - Reference Articles

- Publications
  - Sample Publication Link
  - Sample Publication Link
  - Sample Publication Link
  - Sample Publication Link
- Monographs
  - Sample Monograph Link
  - Sample Monograph Link
  - Sample Monograph Link
- Other
  - Sample Other Link
  - Sample Other Link
  - Sample Other Link

This page last reviewed: 10/18/2004

QC Materials

- QC Materials Home
- Reference Articles
- Guidance and Oversight
- Funding
- Assistance
- Materials Availability
- Materials Needed
- Contributor Acknowledgements

DLS Content

- DLS Home
- CLIA
- Genetics
- International
- IQLM
- MASTER
- Monitoring
- MPEP
- NLTN
- Publications
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QC Materials - Guidance and Oversight

- Professional and Practice Guidelines
  - Link
  - Link
  - Link
- Regulatory Guidelines
  - Link
  - Link
- Recommendations of Validation, Submission and Research / Development Subcommittees
  - Item
  - Item
  - Item

This page last reviewed: 10/18/2004

QC Materials

- QC Materials Home
- Reference Articles
- Guidance and Oversight
- Funding
- Assistance
- Materials Availability
- Materials Needed
- Contributor Acknowledgements

DLS Content

- DLS Home
- CLIA
- Genetics
- International
- IQLM
- MASTER
- Monitoring
- MPEP
- NLTN
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QC Materials - Funding Opportunity and Resource Information

- Funding Sources
  - Source 1
  - Source 2
  - Source 3

- Incentives for donating materials and / or validating materials
  - Incentive here
  - Incentive here
  - Incentive here
  - Incentive here

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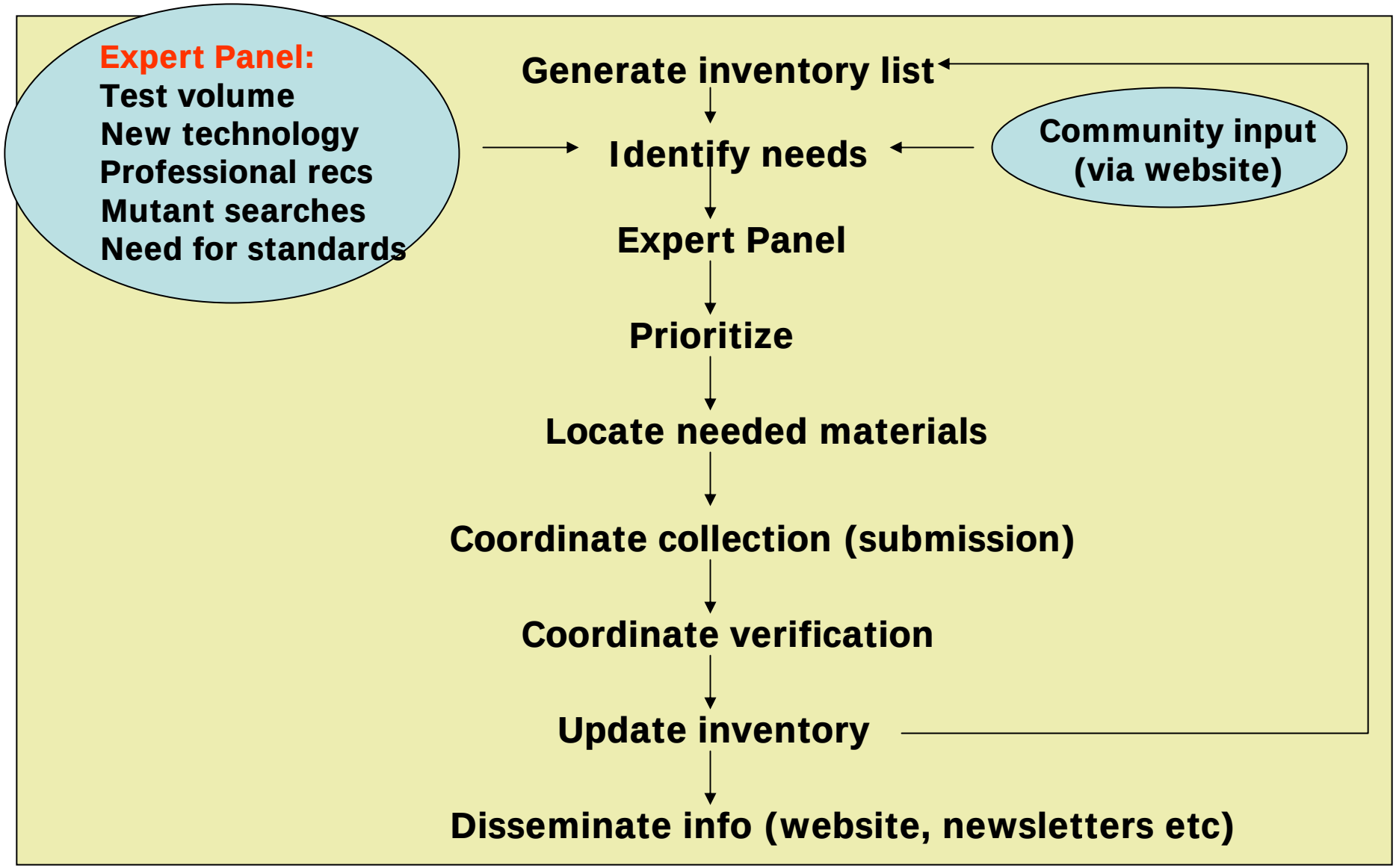
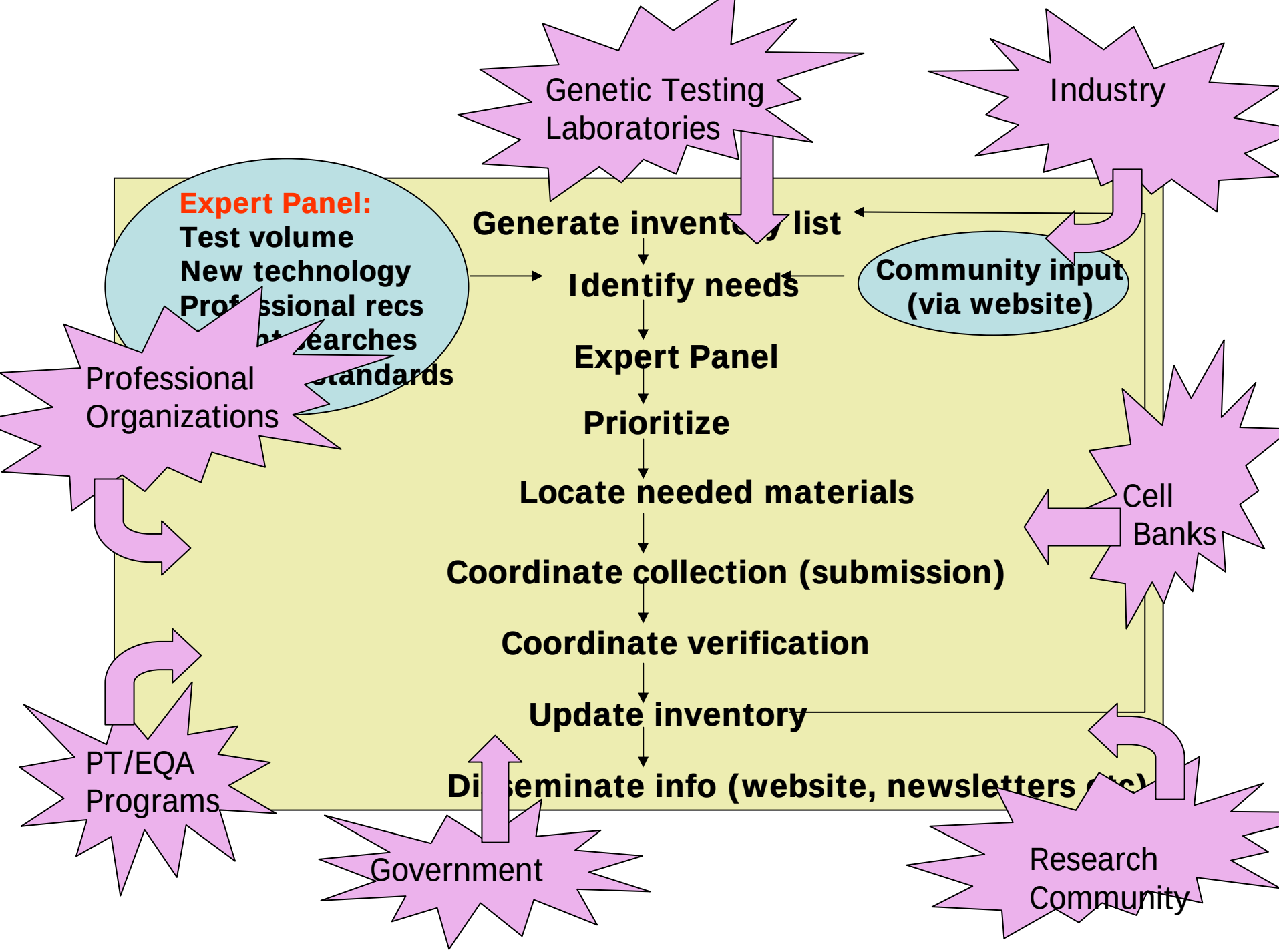
Website Timeline (projected)

- December 2004 – Launch internal prototype
- February 2005 – Launch site publicly

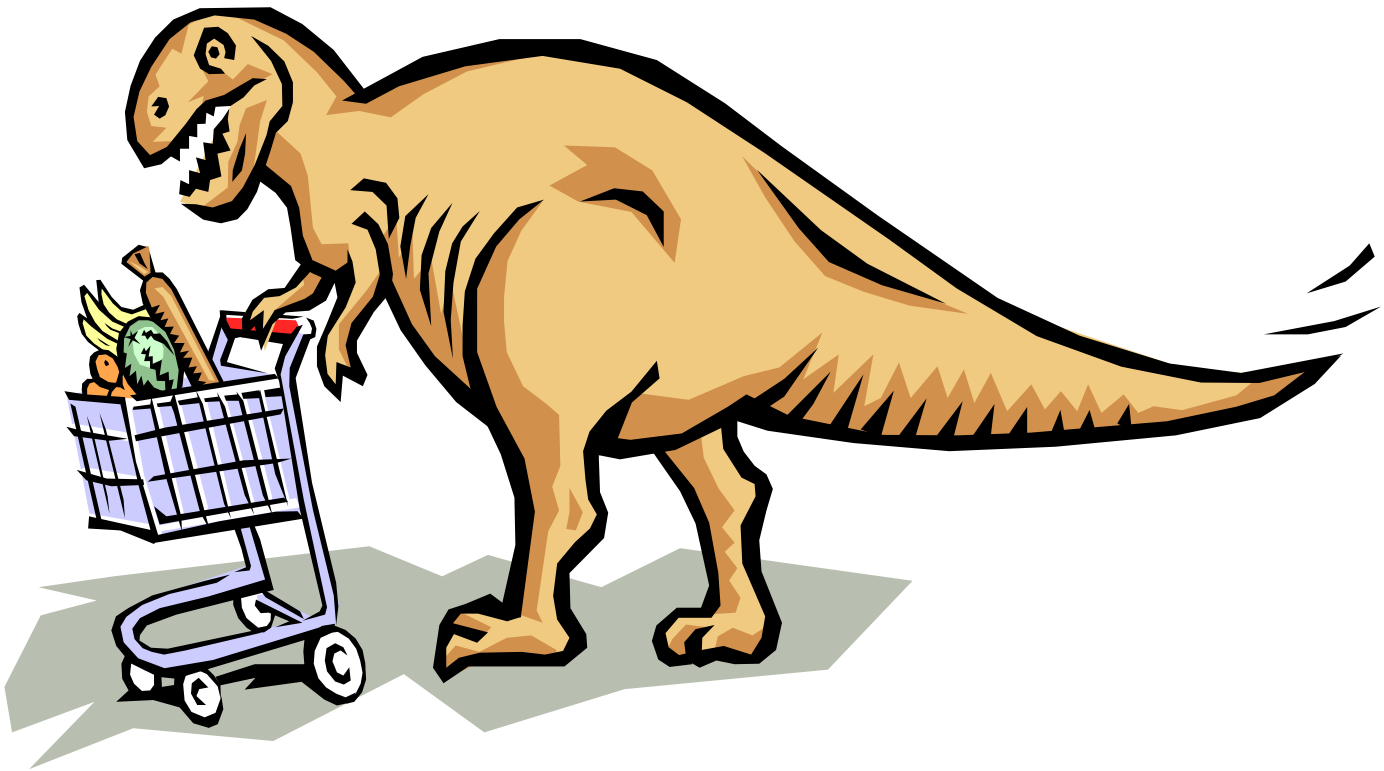
(With Support from the Broad Genetics/Genomics Community!)

QC Materials Flow Chart




Genetic Testing Laboratories
Industry
Expert Panel:
Test volume
New technology
Prof ssional recs
t searches
tandards
Generate inventory list
Identify needs
Community input (via website)
Expert Panel
Prioritize
Locate needed materials
Coordinate collection (submission)
Coordinate verification
Update inventory
Di seminate info (website, newsletters etc)
Professional Organizations
Cell Banks
PT/EQA Programs
Government
Research Community

What Materials are Available Now?



CFTR Mutations

Currently available:

- **25 Mutations on ACMG Panel**
- **Other mutations including:**

  H609R, 1154insTC, R1162L, V520F, 444delA, 1812-1G>A, E92X, E60X, 566delA, M1101K, Q493X, 129G>C, Y1092X, R574H, G178R, G 1349D, I506V, F508C, D1152H, delexons2,3, 3272-26A>G, Y122X, 2183AA-G, 2143delT, S1235R.

Mutations appearing in >0.1% of CF patient chromosomes*

Mutations appearing in 0.01%-0.1% of CF patient chromosomes*

*Watson et al. 2004, Genetics in Medicine 6:387-391.

- **Most cell lines are transformed, most have DNA available, and data on 5T/7T/9T is available for some.**
- **Some cell lines have been verified!**

Fragile X Mutations

Number repeats	Male/Female
28, 49	Female
57*	Male
59, 31	Female
70, 23	Female
78, 30	Female
85, 29	Female
85-90	Male
86	Male
88, 30	Female
95, 23	Female
107, 23	Female
95-120, 23	Female
117	Male

Number repeats	Male/Female
>200	Male
>200, ?	Female
336, 28	Female
351-400	Male
477	Male
501-550	Male
645	Male
931-940**	Male

13 Cell lines with normal repeats (not shown)

* 1 Cell line verified by multiple labs (CDC project)

**1 Cell line - Full methylation indicated

Cell Line Availability

- I have generated tables showing available CFTR and Fragile X cell lines
- Information provided includes:
  - CF: Alleles, intron-8 polyT
  - Fragile X: repeat size, methylation status, mosaic status
  - All cell lines: transformation status, cell type, cell bank, cell line number, verification status and verification methods

These tables will eventually be available on our website

- Copies of these tables are included in your packets. I would appreciate any input you may have on their content!

Emory Fragile X Project

- Drs. Steve Warren and Stephanie Sherman have huge collections of characterized fragile X cell lines, some are sequenced.
- Collections include hundreds of cell lines in the normal, grey, pre and full mutation range. The lists we have to date have repeat sizes ranging from 16 to 157, but we will have information on other available cell lines soon.
- They have kindly offered to donate these cell lines to Coriell for our project!
- **We need input on which of these the cell lines should be developed for QC materials!**

Material Available for Other Disorders.....

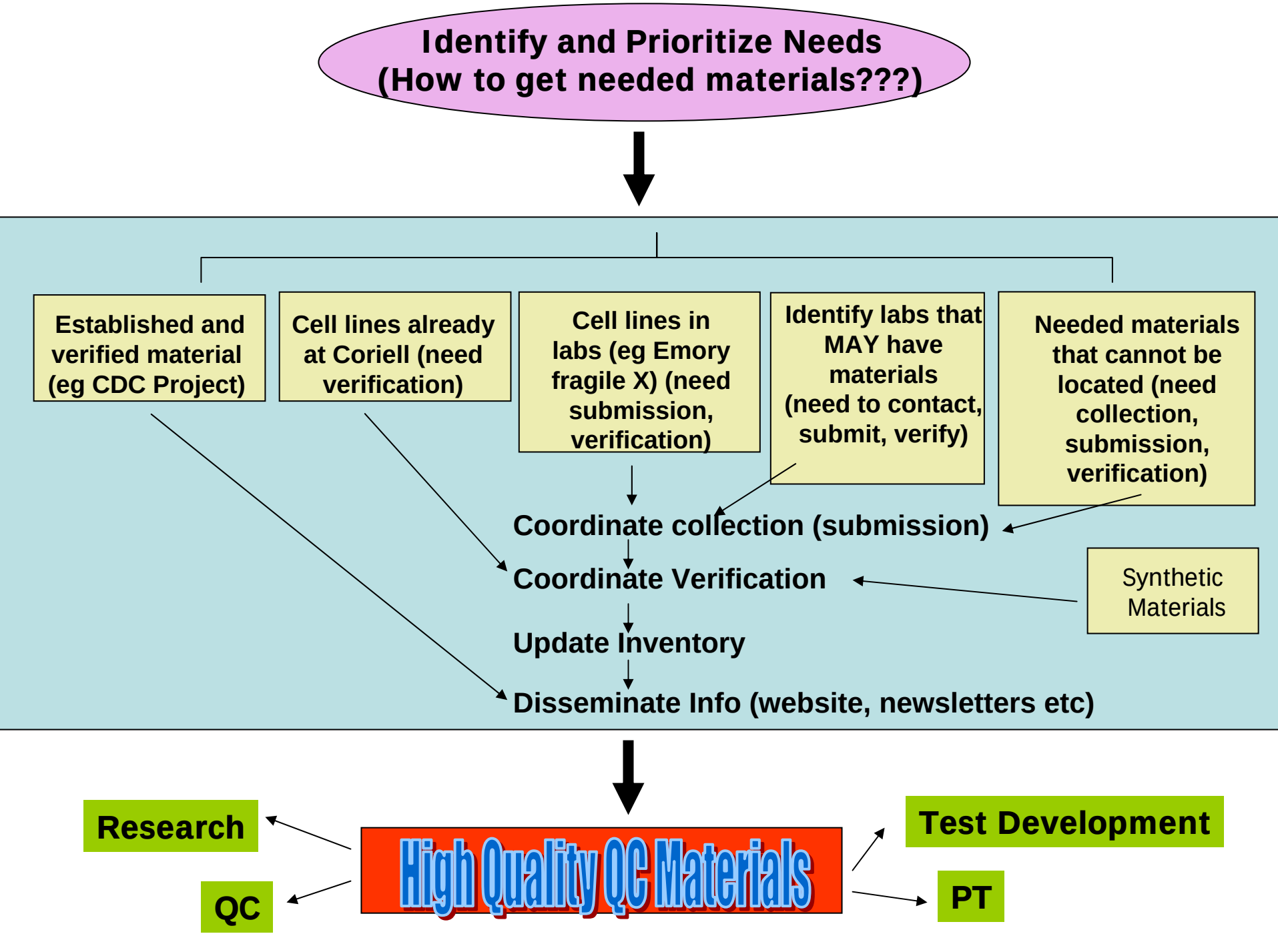
- Have verified cell lines for:

  Connexin 26, Craniosynostosis/Muenke Syndrome, Hemochromatosis, Huntington Disease, MTHFR, alpha-thalassemia

- Other cell lines (not independently verified) exist in cell repositories for these and other disorders as well

Potential Sources of Material

- **Coriell**
- **CRMGEN**
- **NIST**
- **ATCC**
- **Biobanks**
- **Clinical specimens (residual blood and patient recollection)**
- **Research labs**
- **Industry/Material developers**
- **Other?**


Identify and Prioritize Needs
(How to get needed materials???)
Established and verified material (eg CDC Project)
Cell lines already at Coriell (need verification)
Cell lines in labs (eg Emory fragile X) (need submission, verification)
Identify labs that MAY have materials (need to contact, submit, verify)
Needed materials that cannot be located (need collection, submission, verification)
Coordinate collection (submission)
Coordinate Verification
Synthetic Materials
Update Inventory
Disseminate Info (website, newsletters etc)
Research
QC
High Quality QC Materials
Test Development
PT

Two Possible Approaches for Verification

- **Materials can be sent to labs who volunteer to verify them**
- **Data can be collected from users of pre-existing materials**

(the data may already exist - we just have to collect it!)

We Need Community Input!

- Input of ideas/needs
- Material donation
- Material verification
- Support

The National QC Material Coordinator Needs Your Help!

Contact me: LKalman@cdc.gov